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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,893	02/11/2002	Takuya Kitamura	8022-1003	3547
466	7590	11/19/2003		
YOUNG & THOMPSON 745 SOUTH 23RD STREET 2ND FLOOR ARLINGTON, VA 22202			EXAMINER FOONG, SUK SAN	
			ART UNIT 2823	PAPER NUMBER

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/068,893		<b>Applicant(s)</b> KITAMURA, TAKUYA	
	<b>Examiner</b> Suk-San Foong		<b>Art Unit</b> 2823	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on 10 July 2003.

2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 2-12 and 23-25 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 2-12 and 23-25 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All   b) ☐ Some \* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) <input type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____. 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____
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**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 2, 3, 6-9, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in combination with Diodato et al. ('522) and Parekh et al. ('380).

AAPA is relied on for the teachings discussed in the rejections of paragraph 8 of the Office Action mailed on 2/10/03.

AAPA does not disclose that contact formed in the first inter-level dielectric is comprised of a first metal portion comprised of tungsten and barrier layer comprised of titanium nitride between source and first metal portion.

Diodata et al. is relied on for the teachings discussed in the rejections of paragraph 8 of the Office Action mailed on 2/10/03 as providing motivation to enable the formation first contact 104 in APPA to be formed.

The combination does not disclose formation of a second contact and a third contact through first inter-level dielectric and second inter-level dielectric.

Parekh et al. is relied on for the teachings discussed in the rejections of paragraph 9 of the Office Action mailed on 2/10/03 as providing motivation to employ second contact 52 and third contact 86 in the memory array region 12 of Parekh et al. for formation of plug 102 in the combination and obtain further advantage of facilitating formation of contacts and enhancing local interconnect contact formation (Parekh et al., Paragraph [0006]). Furthermore, Parekh et al. disclose that the conductive material deposited in second contact 52 is comprised of doped polysilicon material or another appropriate material (Paragraphs [0025, 0026]) wherein the other appropriate material, in addition to doped polysilicon, for forming contact plugs includes materials such as tungsten and titanium nitride (Paragraph [0038]).

With respect to claim 9, the combination does not disclose the step as recited.

As previously cited, in view of the disclosure of Diodato et al. of the peripheral circuit region, it would have been within the scope to one ordinary skill in the art to combine both the teachings because it would enable formation of the DRAM device of the combination to be performed.

4. Claims 4, 5, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in combination with Diodato et al. ('522) and Parekh et al. ('380) as applied to claims 2, 3, 6-9, 23 and 24 above, and further in view of Amico et al. ('498).

The combination fails to disclose that the bottom electrode includes an electrode barrier layer formed between first metal portion and polysilicon layer.

Amico et al. is relied on for the teachings discussed in the rejections of paragraph 10 of the Office Action mailed on 2/10/03 as providing motivation to enable the formation of the capacitor element in the combination to be formed and obtain further advantage of increasing the throughput during manufacturing of semiconductor devices (Amico et al., Paragraph [0033])

5. Claims 12 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in combination with Diodato et al. ('522), Parekh et al. ('380) and Amico et al. ('498) as applied to claims 4, 5, 10 and 11 above, and further in view of Fukuda et al. ('526).

The combination does not disclose the step as recited in claim 12.

Fukuda et al. is relied on for the teachings discussed in the rejections of paragraph 11 of the Office Action mailed on 2/10/03 as providing motivation to enable the formation of the capacitor element of the combination to be performed and obtain further advantage of mitigating electric field concentrations on the upper ends of bottom electrodes and preventing leakage current increase and dielectric breakdown of the capacitor dielectric film (Fukuda et al., Paragraph [0022]).

***Response to Arguments***

6. Applicant's arguments are addressed in the statements of the rejections above.

***Conclusion***

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suk-San Foong whose telephone number is 703-305-0383. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone numbers for the

Application/Control Number: 10/068,893

Page 6

Art Unit: 2823

organization where this application or proceeding is assigned are 703-308-7722 (7724, 3431, 3432).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



November 13, 2003



George Fourson  
Primary Examiner  
Art Unit 2823